Use of Satellite Radio Technology to Disseminate Critical Emergency Alert & Safety Information

Presented by

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Executive Summary

Satellite radio is about more than providing nationwide entertainment. It is also a uniquely powerful platform for providing the general population and the public safety and the law enforcement communities with critical emergency and safety information.

What makes XM's platform so unique and powerful is its unequalled combination of nationwide coverage, a reliable, redundant and secure network, and inexpensive, easy-to-use equipment. XM's platform includes three (soon-to-be four) of the most powerful commercial satellites ever deployed, each covering the entire contiguous United States, using a frequency band that is not affected by rain, to provide better than 99% coverage; a terrestrial repeater network that adds redundant coverage of the most populated areas of the United States; redundant uplink and control facilities, capable of encryption; and small, inexpensive, lightweight radios in the hands of millions of Americans and accessible to all.

Today, as a result of the significant investment XM has made in its nationwide delivery platform, XM broadcasts emergency alerts and safety information nationwide, on a 24 hour/7 days a week basis, through its (1) XM Emergency Alert Channel 247 (which is "free-to-air", *i.e.*, no subscription required), addressing regional and nationwide events and (2) 21 nationally-transmitted local traffic and weather channels, which also provide emergency information and Amber Alerts specific to select areas around the country. XM also participates in the national Emergency Alert System, providing Presidential Level alerts and certain state and local alerts, and airs a Red Cross Radio channel when the country experiences disasters such as Hurricane Katrina (as with the XM Emergency Alert Channel 247, this channel is "free-to-air"). XM's weather product

is a major contributor to aviation and maritime safety, providing the first and only real-time source of detailed weather maps and information to pilots, mariners, and government emergency personnel operating on the ground. In less than four years since its introduction, it has become standard equipment in virtually all new general aviation aircraft. XM's navigation product provides similar real-time traffic and weather information to vehicles coast-to-coast.

In the near future, as its user devices become more prevalent and the power of its platform is integrated into more public safety communications systems, XM anticipates that it will play an expanded role in public safety. XM has participated in a number of demonstrations for government entities, including the Departments of Homeland Security (including the Federal Emergency Management Agency), Defense, and Health and Human Services, geared towards realizing that vision. In addition to its current use in the Emergency Alert System to distribute Presidential Level alerts to subscribers, XM expects its platform to be used in the near future to add to the EAS distribution structure, allowing alerts to be transmitted immediately and directly to thousands of broadcasters and other EAS participants.

One of the most exciting concepts being developed is the use of XM's platform to distribute emergency information to customized networks of public safety and law enforcement personnel. XM provides a cost-effective solution for the problem of keeping public safety and law enforcement personnel informed and updated (in a confidential manner) in real time during an emergency. XM's off-the-shelf radios can receive audio and text information. With enhancements, the radios also can be used to receive maps, photos, and other data. Because all XM radios are individually

addressable, special groups of XM receivers can be authorized to receive critical situational awareness information, for example, to groups of First Responders and appropriate decision-makers. XM has demonstrated this capability to various government entities.

Notwithstanding that XM has built a robust broadcast platform (as stated above), XM's ability to provide, on a nationwide basis, its subscribers emergency alert information specific to localities of interest (through XM's Traffic, Weather & Alert channels) will be curtailed severely if government policymakers implement measures that effectively limit satellite radio's ability to provide critical local-area emergency alert information to its subscribers. It is our belief that the policymakers should support the efforts we have made (and will continue to make) to enhance the delivery of alert and situational awareness messages to those who are in need of such information. Initiatives within the government to limit the availability of integral elements of this invaluable alert dissemination system would not be beneficial to either XM subscribers or the U.S. population as a whole.

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I. BACKGROUND

XM is one of two companies that successfully bid for licenses from the FCC to operate Satellite Digital Audio Radio Service ("SDARS" or "satellite radio") systems in the United States, using radio spectrum in what is known as the S-band.[1]

XM began operations in late 2001 and has spent over $3 billion on developing and operating its system. XM currently operates three geostationary satellites that cover the 48 contiguous states and parts of Alaska. Another satellite is due to be launched in the Fall of 2006 and an additional back-up satellite will be available by the end of 2007. XM's satellites broadcast from two orbital locations (85ºW and 115ºW) providing XM subscribers with two satellite sources from which to receive the same XM content.

XM subscribers can also receive the broadcast content from a third source: XM operates in-band terrestrial repeaters in larger markets to fill gaps in satellite coverage.[2] The repeaters are limited to receiving and immediately retransmitting the same content broadcast by XM's satellites.[3] The content is transmitted to the satellites from uplink facilities in two separate geographic locations, including Washington, DC. XM has redundant control facilities in four separate locations.

XM has been an enormous commercial success. As of August 2006, over 7 million subscribers have signed up for service that includes over 170 channels of high-

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[1] *American Mobile Radio Corporation*, 13 FCC Rcd 8829 (Int'l Bur., 1997). XM was awarded the license to provide satellite radio service using the 2332.5-2345 MHz band.

[2] *See XM Radio, Inc., Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complementary Terrestrial Repeaters, Order and Authorization*, DA 01-2172 (rel. September 17, 2001).

[3] *See id*. ¶ 18(c) ("SDARS repeaters are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to SDARS subscriber's receivers.").

quality, continuous, multi-channel audio service throughout the United States – from the downtown urban cores to the most rural and remote parts of the United States. Millions of XM radios have been produced. Car manufacturers are increasingly making XM radios standard equipment in their new cars; XM is available in over 140 models for 2006.[4]

XM's programming includes a large selection of commercial-free music channels devoted to an enormous variety of genres, including rock, country, jazz, gospel, classical, soul, hip-hop, bluegrass, folk, and reggae; sports programming that includes live, play-by-play broadcasts of Major League Baseball games; children's channels; and talk formats. Breaking news and critical information is provided by such channels as CNN, CNN en Español, CNN Headline News, FOX News, ABC News & Talk, the Weather Channel, CNBC, MSNBC, Bloomberg Radio/Business, BBC World Service, and CSPAN Radio.

XM's 21 Instant Traffic, Weather & Alert channels provide subscribers with in-depth, up-to-the-moment updates on traffic and weather conditions for 21 metropolitan regions as well as other alert information such as Amber Alerts. These channels, like all of XM's content, are broadcast throughout the continental United States.

II. KEY ATTRIBUTES OF THE XM SYSTEM FOR DELIVERY OF EMERGENCY ALERT AND SAFETY INFORMATION

XM's satellite-based infrastructure is uniquely capable of distributing emergency alerts and other critical emergency information.

[4] XM has partnerships with General Motors (which includes the Buick, Cadillac, Chevrolet, GMC, HUMMER, Pontiac, Saab, and Saturn models), Honda/Acura, Toyota/Lexus/Scion, Hyundai, Nissan/Infiniti, Porsche, Suzuki, and Isuzu.

A. Ubiquitous Coverage

XM's high-power geostationary orbit satellites provide reliable coverage of over 99% of the contiguous United States, including the most rural and remote areas. Even in areas without any terrestrial wireline or wireless communications infrastructure whatsoever, XM's satellites are able to deliver critical information to subscribers.[5] In many highly-populated areas, to the extent a satellite signal is blocked by buildings or terrain, XM has deployed terrestrial repeaters to overcome any blockages. Moreover, unlike terrestrial systems, XM's satellites provide service not only to land-based users, but to aeronautical and maritime users as well.

B. Reliability and Redundancy

XM's satellites are located thousands of miles above the Earth and are thus not affected when disasters occur on the ground, nor are they vulnerable to failures in the power grid or damage to underground telephone lines. In times of disaster, the terrestrially-based infrastructure upon which the American public, First Responders, and public safety officials have largely relied for communications and information is often disrupted by the disaster itself. Indeed, the recent White House Katrina Report concluded that during Hurricane Katrina, "most of the radio stations and many television stations in the New Orleans area were knocked off the air."[6] The Director of the FCC's Office of

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[5] *See Extending Wireless Telecommunications Services To Tribal Lands, Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd 11794, ¶ 13 (June 30, 2000) ("Satellites also provide communications opportunities for communities in geographically isolated areas, such as mountainous regions and deep valleys, where rugged and impassable terrain may make service via terrestrial wireless or wireline telephony economically impractical.").

[6] *The Federal Response to Hurricane Katrina: Lessons Learned* (February 2006) at 34 (available at *www.whitehouse.gov/reports/katrina-lessons-learned.pdf*) ("*White House Katrina Report*").

Homeland Security has explained that "nearly one hundred radio and television stations remained off the air *a month* after Hurricane Katrina's landfall."[7] The White House Katrina Report also quotes Paul McHale, the Assistant Secretary of Defense for Homeland Defense, as stating that "The magnitude of the storm was such that the local communications system wasn't simply degraded; it was, at least for a period of time, destroyed."[8]

Conversely, because satellites are located thousands of miles above the Earth and are thus able to operate even when disasters occur on the ground, satellites perform remarkably well during disasters such as Hurricane Katrina. Although some of XM's ground-based terrestrial repeaters suffered damage in the Gulf Coast region during Hurricane Katrina, XM's satellite signal continued to deliver critical information to anyone with an XM receiver and a view of the southern sky. Even if a repeater is down in a given area, or satellite coverage is poor, XM can quickly deploy a mobile repeater to an area struck by a disaster to ensure continuous high-quality coverage.

XM's system is also very reliable in comparison to other satellites services. XM's S-band frequencies are in a lower part of the radiofrequency spectrum than many other satellite systems, so its signals are not as susceptible to disruption from rain. This advantage is critical during hurricanes and other severe storms.

The redundancy of XM's network also adds to its reliability. XM currently has in-orbit redundancy, and will be launching another satellite in the Fall of 2006. XM's

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[7] Kenneth Moran, Director of the Office of Homeland Security, Enforcement Bureau, Federal Communications Commission, Written Statement for a Hearing on Hurricane Katrina and Communications Interoperability (September 29, 2005), submitted to the Senate Committee on Commerce, Science and Transportation, 109th Congress, 1st session.

[8] *White House Katrina Report* at 34.

two uplink facilities and four control centers (located at different sites) provide further redundancy.

C. User-Friendly, Widely-Available, and Inexpensive Consumer Receivers

XM's satellite receiver technology has achieved revolutionary advancements in reducing the size and cost of receivers. Because of the high power of XM's satellites and the economies of scale achieved in producing millions of receivers, XM has enabled the production of a wide variety of consumer devices--some as small and lightweight as a deck of cards, and some costing the user less than $50 for the device. All of XM's receivers are sold either already installed in automobiles, off-the-shelf at major consumer electronics stores, or over the Internet. Most of the radios include a display that enables simultaneous transmission of text, and most can be battery-powered – including those that operate in vehicles – allowing receivers to continue to operate even when electrical power is disrupted. In the future, the technology that enables reception of XM's signals may be incorporated into other consumer and public-safety-specific devices, including mobile phones.

D. Security

XM maintains ownership and control of its entire system, including the satellite and repeater network, the state-of-the-art broadcast operations center, and the XM-developed receiver chipset. XM also has sophisticated capabilities in data encryption, conditional access control, and secure individual addressability for every XM receiver. The latter capability enables XM to instantaneously dedicate one, some, or all of its channels to the transmission of emergency information.

III. EMERGENCY ALERT AND SAFETY INFORMATION DELIVERED TO XM'S SUBSCRIBERS

A. Emergency Alert and Safety Information Currently Provided to XM Subscribers

XM has invested and continues to invest significant resources to provide its subscribers with access to real-time emergency information in both mobile environments, such as in cars, and in fixed environments, including homes and offices. Discussed below are some of the ways in which XM currently provides critical emergency information to its subscribers.

1. Instant Traffic, Weather & Alert Channels

XM's 21 Instant Traffic, Weather & Alert Channels provide subscribers throughout the nation with in-depth, up-to-the-moment updates on traffic and weather conditions in twenty-one metropolitan regions.[9] These regions cover approximately 117 million people, just over 40% of the total population of the United States. The traffic and weather information is continually updated and transmitted throughout XM's service area, 24 hours per day, 7 days per week, on channels each dedicated to a particular metropolitan area. Thus, for example, a satellite radio listener located anywhere in the country can hear traffic reports, weather forecasts, and emergency alerts for the Los Angeles region simply by tuning to the channel dedicated to Los Angeles traffic, weather, and emergency alerts. For XM subscribers taking extended trips, this service is particularly useful. For example, one traveling along I-95 from Washington, DC to

[9] XM currently provides Instant Traffic, Weather & Alert channels for the following cities and their surrounding areas: Atlanta, GA; Baltimore, MD; Boston, MA ; Chicago, IL; Dallas/Ft. Worth, TX; Detroit, MI; Houston, TX; Los Angeles, CA; Miami/Ft. Lauderdale, FL; Minneapolis/St. Paul, MN; New York, NY; Orlando, FL; Philadelphia, PA; Phoenix, AZ; Pittsburgh, PA; San Diego, CA; San Francisco Bay Area, CA; Seattle, WA; St. Louis, MO; Tampa, FL; Washington, DC.

Boston can "listen ahead" to traffic, weather and alerts for Baltimore, Philadelphia, New York and Boston. During summer months, XM provides wide coverage of beach traffic to major shore destinations.

This traffic and weather service has improved driver safety by alerting drivers to impending threatening weather, allowing them to plan alternate routes around, or to delay trips to, the affected area. Similarly, satellite radio listeners at home or work use the up-to-date weather forecasts, particularly in the event of a fast-approaching storm.

XM also uses its Instant Traffic, Weather & Alert channels to transmit up-to-date emergency information. XM monitors and receives alerts from national organizations dedicated to promoting public safety, such as the Department of Homeland Security's Federal Emergency Management Agency ("FEMA"), the National Oceanic and Atmospheric Administration's ("NOAA"), National Weather Service ("NWS"), the U.S. Department of Health and Human Services ("HHS"), and the American Red Cross, among others. XM also works closely with state and local public safety organizations in each of the metropolitan regions for which it offers an Instant Traffic, Weather & Alert channel. XM has made arrangements for these state and local public safety organizations to relay critical information to XM.

The Instant Traffic, Weather & Alert channels are staffed 24 hours per day, 7 days per week, meaning that critical emergency information can be received and transmitted at any time of day or night. XM is staffed with approximately 60 people devoted to the operations of these channels. As soon as XM receives emergency information from one of these national, state, or local organizations, it immediately transmits the information on one or more of its Instant Traffic, Weather & Alert channels. For example, when

Hurricane Ivan struck the Gulf Coast in 2004, critical information was broadcast on the Houston, Orlando, and Tampa Instant Traffic, Weather & Alert channels.

XM also uses its Instant Traffic, Weather & Alert channels to transmit Amber Alerts. Amber Alerts include both verbal delivery of critical information about the alleged abductor and a visual scroll of the alleged abductor's license plate number and other vital information, which appears on the display screen of the XM receiver. XM's ability to transmit this information on multiple Instant Traffic, Weather & Alert channels as appropriate and its full coverage of the contiguous United States is particularly useful if an alleged abductor is fleeing the area of the kidnapping.

The XM Instant Traffic, Weather & Alert channels have been widely praised by both satellite radio subscribers and government agencies. When the National Association of Broadcasters filed a Petition with the FCC asking the FCC to block these channels,[10] over 25,000 satellite radio listeners from all 50 states filed comments opposing NAB's Petition, including truck drivers, commuters, travelers, and public safety and health workers, among others. They noted the enormous benefits the traffic and weather service provides, including promoting safety by providing alerts on impending severe weather, preventing delays and saving fuel by reporting on traffic congestion, facilitating traffic management for long-distance drivers by providing traffic and weather information well in advance of reaching a destination, aiding travelers who are unaware of which local radio stations offer traffic and weather information and thereby promoting safety by avoiding the need to scan the AM and FM dial in search of traffic and weather information, and facilitating in planning of trips. They also noted the unique advantages

[10] National Association of Broadcasters, Petition for Declaratory Ruling, MB 04-160 (April 14, 2004). In light of overwhelming opposition, NAB withdrew this Petition.

of the traffic and weather service offered by satellite radio, such as instantly available reports, frequently updated information, and 24/7 availability.

Among the supporters of the service was the United States Department of Transportation, which explained:

> Not only is the information conveyed by SDARS providers more frequently updated and thus more accurate, but local broadcasters simply cannot offer such information to those outside the very finite range of their transmissions, usually a discrete community area. More importantly, they fail to appreciate the true value of making travel-related information widely available beyond such areas and on a continuous basis.
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> It is beyond question that there is a strong public interest in making available to drivers information that is relevant to their actual and potential journeys. Awareness of traffic congestion, the locations and consequences of accidents, road surface conditions, weather, etc. is important to travelers because it enables them to make better decisions about whether and when to travel, which route(s) to follow, what equipment to carry, and what contingencies to anticipate. Informed decisions, in turn, allow motorists, including commercial drivers of over-the-road trucks and buses, to avoid adding to congestion or emergency response problems, save time, and reduce fuel consumption and pollution. The result is enhanced safety, efficiency, and predictability, as well as improved traffic management.[11]

2. XM Emergency Alert Channel 247

When Hurricanes Ivan and Jeanne hit Florida in September 2004, the need for information was so urgent for a large part of the country that XM launched a new channel – XM Emergency Alert Channel 247. This channel is dedicated to providing critical, updated information before, during, and after natural disasters, weather emergencies, and other hazardous incidents that have a substantial impact on a large portion of the nation. On this channel, listeners can receive key survival information such as evacuation routes,

[11] *See* Reply Comments of United States Department of Transportation, MB 04-160 (June 21, 2004) (attached hereto as Exhibit A).

shelter locations, and updated weather emergency information for impacted areas. This information is received from various sources, such as state and local governments, FEMA, NWS, HHS, the American Red Cross, and even eyewitness reports.

All XM radios receive the XM Emergency Alert Channel 247 – regardless of whether a subscription fee has been paid. Thus, all of the millions of XM receivers throughout the United States today (in cars, in boomboxes, and in portable radios) receive XM Emergency Alert Channel 247, whether or not the receiver has been activated. Even those owners of XM factory-installed cars who have chosen not to subscribe to XM's services can receive the information transmitted on the XM Emergency Alert Channel 247.

As with XM's Instant Traffic, Weather & Alert channels, the XM Emergency Alert Channel 247 is continually updated and transmitted throughout the contiguous United States, 24 hours per day, 7 days per week. This is critically important in times of emergency. For example, in March 2006, when tornadoes devastated northwestern Arkansas, XM provided warnings regarding these storms on XM Emergency Alert Channel 247. As has been widely reported, however, local radio stations failed to provide any warnings because, according to local stations managers, "[m]ost radio stations in Northwest Arkansas do not have workers at night or on weekends."[12]

During Hurricane Katrina, when other means of communication were disabled, XM Emergency Alert Channel 247 served as a key source of information for hurricane victims, safety officials, relief workers, and local news media in the area. XM received reports after Hurricane Katrina praising the service for its ability to provide critical

[12] *See* Jeff Smith, "Radio Stations Silent on Tornado Warning," The Morning News (attached hereto as Exhibit F).

information when terrestrially-based media outlets were disabled. For example, an XM subscriber from Metairie, Louisiana explained his portable XM receiver was his only reliable source of information and he used it to keep his neighbors informed as events unfolded during and after the Hurricane.

One particularly critical element of XM Emergency Alert Channel 247's success has been its use of a toll-free number to enable listeners to call to inform XM staff of important developments and request more detailed information. For example, during Hurricane Ivan, XM received calls from Gulf Coast residents seeking information on whether evacuation orders had been lifted for their towns. In one instance, based on information provided to XM by FEMA and the American Red Cross, an XM Instant Traffic, Weather & Alert channel producer was able to provide a resident of Pensacola, FL with details concerning which roads she could use to return to Pensacola, as well as information regarding shelters available in the area. In another instance, an XM Instant Traffic, Weather & Alert channel producer provided a convoy of repair crews with alternate travel routes after the main bridge to Pensacola was rendered impassable.

3. Red Cross Radio

Beginning during Hurricane Katrina, XM also established an additional, temporary public safety channel, Red Cross Radio XM Channel 248, which is activated as needed. This channel successfully broadcast information pertinent to Red Cross workers in the Gulf Coast region and to Red Cross aid stations in Houston and other cities. XM donated more than 300 radios for Red Cross workers to listen to the channel. As with XM Channel 247, Red Cross Radio was available to anyone with an XM receiver

without the need to pay a subscription fee. The Red Cross has hailed the success of this effort and plans to incorporate its use into future disaster planning and management.[13]

4. National-Level EAS Alerts

XM is a participant in the Emergency Alert System ("EAS"). The national EAS uses a hierarchical and terrestrial-based structure for distribution of "Presidential Level" alerts to the public. FEMA has designated 34 radio stations as Primary Entry Points ("PEP"). FEMA distributes Presidential Level alerts to these 34 PEP stations, which are monitored by 550 Local Primary One ("LP1") broadcast stations. The LP1 stations are in turn monitored by other radio and television broadcast stations and cable systems which then transmit the alert to their viewers and listeners.

XM has committed to transmitting national-level EAS alerts to its subscribers on all of its channels. XM currently has EAS equipment located at its headquarters in Washington, D.C. which monitors an LP1. In the event that a Presidential Level alert is delivered, XM is equipped with a manual switching device that can force every XM channel to the emergency audio alert delivered by the President or his designate. XM's headquarters and operations center are staffed 24 hours per day, 7 days per week, thus enabling national-level alerts to be received and transmitted at any time. In November 2005, the FCC adopted rules requiring satellite radio operators to transmit national-level EAS messages. XM is fully capable and prepared to meet this requirement.[14]

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[13] Eilene Guy, "Live From Washington, D.C., This is Red Cross Radio!" (September 14, 2005) (available at http://www.redcross.org/article/0,1072,0_312_4620,00.html) (attached as Exhibit B).

[14] *See Review of the Emergency Alert System, First Report and Order and Further Notice of Proposed Rulemaking*, EB Docket No. 04-296, FCC 05-191 (rel. November 10, 2005) ("*EAS Order*"). XM has filed a Petition for Partial Reconsideration and Clarification of the *Order* requesting narrowly-tailored relief limited to the testing of

5. State and Local EAS Alerts

Also in October 2004 and in response to the FCC's *Notice of Proposed Rulemaking*, XM voluntarily committed to transmit state and local EAS alerts to its subscribers on the Instant Traffic, Weather & Alert channel appropriate for the region in which the emergency occurs, if XM receives alerts from the originating state and local EAS sources. XM listeners tuned to the Instant Traffic, Weather & Alert channel for the region in which the emergency occurs will thereby receive alerts just as terrestrial television viewers and radio listeners do.

6. XM WX Satellite Weather Service

XM also offers its XM WX Satellite Weather service which provides real-time weather information, including graphical displays, to special receivers intended primarily for the general aviation and maritime community, as well as ground-based government emergency personnel and First Responders. These receivers display detailed information on weather and surface conditions, including real-time weather radar that enables precise tracking of hurricanes and other severe storms, such as tornadoes .

XM WX Satellite Weather has substantially improved pilot situational awareness for general aviation by providing comprehensive real-time graphical weather information (*e.g.*, high-resolution radar, wind speed, cloud cover) to aircraft in flight over the continental United States and by making this vital information affordable to recreational pilots.[15] In addition, this service provides information on temporary flight restrictions, so

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national EAS alerts and the transmission of EAS codes and attention signals. *See* XM Radio Inc., Petition for Partial Reconsideration and Clarification, EB Docket No. 04-296 (December 27, 2005).

[15] The XM WX Satellite Weather service received a 2005 Editor's Choice Award from *Flying* magazine. *See* Exhibit C.

that pilots of general aviation craft, especially those limited to operating under visual flight rules, have up-to-the-minute information on "no-fly" areas.

XM WX Satellite Weather receivers have been certified by the Federal Aviation Administration and the technology and service have been adopted as the principal uplink weather solution by the leading avionics and aircraft manufacturers. XM WX Satellite Weather is installed as part of the factory specification on more than 80% of all new general aviation aircraft sold in the United States. *Flying* magazine's editor-in-chief described XM WX Satellite Weather as follows:

> I'm not overstating the case to say that having precise, timely and reliable information in the cockpit changes the way we fly – particularly under Instrument Flight Rules – more than anything since the availability of GPS…XM wasn't designed to serve aviation because there aren't enough airplanes and pilots to support it. But thanks to the millions listening in their cars and elsewhere, there *is* extra XM capacity to make our flying safer and more enjoyable.[16]

The XM WX Satellite Weather service also provides crucial maritime information, including location-specific graphical weather information (*e.g.*, high-resolution radar, wave height, surface temperature), dramatically improving mariners' situational awareness.

The XM WX Satellite Weather service has significant benefits for the public safety community. Mobile emergency crews equipped with one of these receivers can track oncoming storms to determine the areas in which the most severe damage will likely occur and deploy quickly to those areas where relief is most needed.

[16] *Flying* magazine, January 2005, at 7-12.

7. XM NavTraffic Service

XM's NavTraffic service provides detailed automobile traffic information overlaid on the road map of vehicle navigation systems, allowing the navigation system to display continuously updated data describing traffic conditions between a driver's current location and his destination. Currently, XM NavTraffic service is available in 44 metropolitan areas across the country. In addition to traffic information, the service provides weather-related alert information on a timely basis. The NavTraffic data is continuously updated, so the motorist always has the latest available information, and is made aware of changing conditions (such as accidents and weather-related incidents) as they occur. NavTraffic provides detailed information for an entire metropolitan area, including "flow" information (showing the average speed of traffic along major roadways) as well as "incident" information (such as vehicle breakdowns and accidents or weather-related events).

Given XM's coast-to-coast coverage, traffic information can be provided for roadways outside the coverage area of terrestrial radio stations, such as interstate highways between cities. All of the NavTraffic data for every metropolitan area is available to every user nationwide, thereby allowing drivers to plan ahead and avoid congestion. For example, a motorist or truck driver traveling from Washington, DC to Boston, MA can view traffic conditions for Washington, Baltimore, Philadelphia, New York and the I-95 corridor in order to plan ahead to avoid areas of congestion or bad weather.

XM NavTraffic is being widely adopted by leading auto makers, including General Motors, Honda, Toyota and Nissan. XM projects that at least 200,000 NavTraffic-equipped vehicles will be on the road within the next 2 years. Moreover, XM

NavTraffic has been adopted by leading aftermarket vehicle navigation system manufacturers, including Garmin (the world's largest manufacturer of GPS devices), Pioneer, and Alpine.

B. Planned Enhancements in the Provision of Emergency Alert and Safety Information to XM's Subscribers

While XM is proud of its accomplishments in delivering emergency alert and safety information to its subscribers, it continues to invest resources in developing new and better ways to disseminate emergency information to its subscribers.

1. Enhancing the Provision of State and Local EAS Alerts

XM is committed to enhancing the utility of the state and local alerts it provides on its Instant Traffic, Weather & Alert channels. By early 2007, XM is planning to provide in its second-generation XM2Go receivers (such as the Pioneer Inno and Samsung Helix) the ability to enable subscribers to choose to be alerted when a state or local EAS alert is being transmitted over an Instant Traffic, Weather & Alert channel. The "Tune Select" feature on these second-generation XM2Go receivers currently allows a subscriber to enter the names of the subscriber's favorite artists into the receiver in order to be alerted with an audio tone when a song from one of those artists is being played on any XM channel. Once alerted, the subscriber can push a button to switch to the XM channel playing the song. Similarly, XM subscribers will be able to enter names such as "LA Alert" using the Tune Select feature on these second-generation XM2Go receivers in order to be alerted when a state or local EAS alert is being transmitted over the Instant Traffic, Weather & Alert channel for Los Angeles. Thus, using the Tune Select feature on these receivers, subscribers can choose to be alerted when a state or

local EAS alert is being transmitted over a particular Instant Traffic, Weather & Alert channel.[17]

2. Crank and Battery-Operated Radios

XM is working to develop more receivers that are not dependent on electricity. For example, XM is exploring the potential of crank-powered and battery-operated portable XM receivers that do not require electrical charging. Such receivers could be particularly useful during disasters when electricity may be unavailable.

IV. EMERGENCY ALERT AND SAFETY INFORMATION DELIVERED TO EAS PARTICIPANTS AND PUBLIC SAFETY OFFICIALS

In addition to delivering access to real-time emergency information to its subscribers, XM is also dedicated to developing the use of its satellite radio system to

[17] There is currently no efficient means for distributing the estimated tens of thousands of state and local emergency alerts transmitted monthly from their originating sources nationwide to XM for XM's dissemination to its subscribers. Even if XM were able to obtain all of these alerts in an efficient manner, because satellite radio operators transmit the same programming nationwide, transmission of emergency information tailored to the subscriber's location would require the development of receivers capable of receiving alerts only when they are located in areas impacted by an emergency. While addressable receiver technology enables transmission of information nationwide but reception by only certain receivers, such as those receivers owned by subscribers who have provided XM with an address that is in an area where an alert has been activated, the use of address data often does not accurately reflect where the subscriber is actually located at any given point in time. Another approach for providing localized information is through GPS-based receiver location information, but the vast majority of the millions of satellite radio receivers in existence today are not GPS-enabled, (NavTraffic and XM WX Weather Service receivers are GPS-enabled) leaving a significant base of legacy receivers without the capability of receiving this information. Even if addressable or GPS-enabled receivers permit transmission of emergency information that is tailored to a subscriber's location, bandwidth constraints will not permit the nationwide transmission by satellite radio operators of every state and local emergency alert given the sheer volume of these alerts transmitted throughout the nation on a daily basis. Because satellite radio operators transmit the same programming nationwide, the same amount of bandwidth is required to transmit an alert to one XM receiver as it is to every XM receiver.

facilitate the dissemination of critical emergency information to EAS participants and public safety officials.

A. XM as a Distributor of EAS Alerts to Other Media Outlets

XM's satellite-based infrastructure can serve as a satellite-based complement to the current EAS distribution structure. XM is currently working with FEMA to upgrade the EAS distribution structure. Under the current structure, the Presidential Level EAS message is sent via terrestrial links to the first line of broadcast stations known as Primary Entry Points ("PEPs"), which broadcast the message to 550 LP-1 stations, which then re-broadcast the message to LP-2 stations, and so on through the broadcast station hierarchy. Under the first phase of the upgrade project, which is planned to be implemented by the end of 2006/early 2007, XM is expected to provide a communications delivery vehicle for Presidential Level EAS messages through its system to XM-customized EAS receivers located at approximately 100 sites throughout the nation. Not only do such sites include the 30 continental U.S. PEPs, but also 24 additional PEPs (to be designated by FEMA) and 48 state emergency operations centers. Additional receivers at new sites could be deployed in the future.

XM also envisions becoming a primary backbone for delivery of the Presidential Level EAS message, not just to the PEPs, but to all participants in the EAS. As a broadcast-type system, XM can deliver Presidential Level EAS messages simultaneously to all terrestrial broadcasters, cable systems, and state and local emergency operations centers outfitted with XM EAS receivers, as well as directly to XM subscribers. As discussed above, XM's satellite-based infrastructure is particularly well-suited to transmitting these national EAS alerts. XM's involvement in improving the EAS reflects its strong corporate commitment to public safety and emergency notification.

XM has also been working for two years with the White House, FEMA, and NOAA on the Digital Emergency Alert System ("DEAS") National Capital Region ("NCR") Pilot, a pilot program for the Integrated Public Alert and Warning System ("IPAWS"). The goal of the project is to demonstrate the digital capabilities of satellite radio, and other communications technologies, to enhance the dissemination of alerts and warnings to the American public. XM has demonstrated its ability to receive (via public TV frequencies) and retransmit a Common Alert Protocol ("CAP") message to XM radios. Most recently, in July 2006, XM successfully participated in a demonstration of the DEAS NCR Pilot.

B. XM as a Provider of Situational Awareness Capabilities

XM's consumer receivers may also play a key role in meeting the critical need of public safety and law enforcement officials for commercial, off-the-shelf equipment to provide connectivity among Federal, State, and local authorities.[18] XM's one-way distribution system is particularly effective in disseminating vital situational awareness information in real-time to multiple parties during a disaster. For example, XM's existing network could be used to deliver a reliable, dedicated audio channel to emergency personnel and decision-makers across various levels of government and across multiple jurisdictions.

This capability requires Federal, State, and local public safety officials to be equipped with a device capable of receiving XM's signals. Such a device could either be

[18] One of the recommendations of the recent White House Katrina Report was the following: "To restore operability and achieve interoperability, there is a strong need for rapidly deployable, interoperable, commercial, off-the-shelf equipment that can provide a framework for connectivity among Federal, State, and local authorities." *The Federal Response to Hurricane Katrina: Lessons Learned* (February 2006) at 97 (available at *www.whitehouse.gov/reports/katrina-lessons-learned.pdf*).

a stand-alone XM receiver or it could be integrated into another device, such as a public safety wireless device. Through addressable receiver technology, XM can transmit critical information nationwide that is capable of being received only by those public safety officials (or other groups of persons) so authorized to receive such transmission. These individually-addressable radios will enable government agencies to broadcast voice or data messages to an individual radio or a select group of radios. Because the information will be delivered by satellite, it will be transmitted not just to officials on the ground in the immediate vicinity of a base station, but to officials throughout XM's coverage area, including aboard aircraft and watercraft.

This dissemination of critical information will vastly improve coordination among the various Federal, State, and local authorities responding to a disaster in disparate locations, including on land, on sea, or in air. Timely broadcasts of key information to First Responders and other public safety officials are critical to ensure that agencies can respond effectively to a disaster by alleviating confusion early after the event occurs, directing multiple resources simultaneously, and reallocating resources as new information becomes available. Not only will First Responders receive the situational information, but the other critical components of a disaster management team, such as hospitals, supply organizations, and leadership, can also have access to the same information.

The information can also be transmitted on a tiered basis, whereby certain sub-groups receive either more or less information. For example, all designated groups could receive basic situational awareness information regarding a biological terrorist attack (*e.g.*, location of incident, type of germ thought to be present, estimated number of people

affected, information on evacuation routes) while certain sub-groups (*e.g.*, mobile medical units), in addition to receiving this basic information, can be pre-designated to receive more detailed information specific to treatment of individuals exposed to a poisonous agent.

Border security can also benefit significantly for XM's situational awareness capabilities. XM can broadcast encrypted information in voice, text or image format to all relevant border security personnel, such as a Border Patrol sector or Joint Terrorism Task Force roster. For example, through XM's system, the United States government can broadcast to appropriate personnel the picture of a suspect, terrorist, or wanted criminal, or other updated information.

Nuclear power plant personnel and residents in surrounding areas can also benefit from XM's capabilities. For example, in the event of a nuclear power plant emergency, XM can broadcast a warning and evacuation information to citizens within the plant perimeter as well as to those outside of the plant perimeter to provide critical evacuation information. The warning system's effectiveness can be maximized by arranging for a wide distribution of XM receivers to power plant personnel, households, and businesses around a nuclear power plant. Such warning could be broadcast on XM Channel 247 or through a dedicated audio channel that only those authorized can access.

Over the past couple of years, XM has demonstrated the situational awareness capabilities of its system to several Federal government entities, including the Department of Homeland Security ("DHS") (including FEMA, Customs and Border Protection's Border Patrol, Coast Guard), NOAA, HHS, the National Communications

System, the Air Force, and Northcom, as well as state and local government entities. Below are some examples.

- XM participated in a mock Weapons of Mass Destruction event in Monmouth County, New Jersey. The purpose of this demonstration was to show how effectively and quickly first responders could evacuate the injured to area hospitals and provide the hospitals information on the incoming injured. In the mock event, five hospitals were equipped with XM receivers to enable them to receive critical information regarding the disaster. XM received high marks from both FEMA and Monmouth County for its ability to provide First Responders and decision makers with critical information, on a continuous basis, via a dedicated channel.[19] In its report regarding the event, FEMA stated that:

  > The use of XM Satellite Radio proved to be instrumental during the full scale exercise. XM radio systems were installed in all 5 area hospitals and situational awareness was broadcast over this system. Comments later during the after action reviews were that XM Radio was the sole means of communications from the scene to the hospitals. The information broadcast gave the hospitals some idea of numbers and types of affected patients.

- In June 2005, at the Coalition Warrior Interoperability Demonstration (CWID), XM demonstrated to the Department of Defense ("DOD") and the U.S. Northern Command its ability to, within seconds, broadcast on a dedicated channel a critical message called-in by participants.[20]

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[19] Attached hereto as Exhibit D is a letter from the Monmouth County Office of Emergency Management praising XM's ability to transmit situational awareness information.

[20] *See* Goeff Fein, "Spotlight: Using Satellite Radio for Homeland Security," Space News (June 20, 2005) (attached hereto as Exhibit E).

- In September 2005, XM participated in a field test held over mountainous and wooded terrain in Montana to study the use of XM's system to support the DOD's Mobile On-Scene Sensor Aircraft Intelligence Command, Control and Computer Center (MOSAIC) initiative. XM radios in the field were able to receive signals in places where two-way terrestrial-based communication systems were inoperative due to the geographic conditions.

V. CONCLUSION

Today, XM provides a platform for dissemination of emergency alerts and safety information in a wide variety of ways: through its XM Emergency Alert Channel 247 and Red Cross Radio channels, 21 nationally-transmitted local traffic, weather and alert channels, and participation in the national Emergency Alert System, providing Presidential Level alerts and certain state and local alerts to its subscribers. XM also provides weather and alert information to mariners and aviators, as well as to those using navigation systems in vehicles.

In the near future, as its user devices become more prevalent, XM anticipates that it will play an expanded role in public safety. In addition to its current role in the Emergency Alert System to distribute Presidential-Level alerts to its subscribers, XM's platform will be able to add to the EAS distribution structure, allowing certain alerts to be transmitted immediately and directly to thousands of broadcasters and other EAS participants (e.g., state emergency operations centers).

XM can also provide a cost-effective solution for the problem of keeping public safety personnel informed and updated in real-time during an emergency. As demonstrated already to various U.S. government entities, XM's platform can distribute

emergency information to targeted special groups (i.e., First Responders and decision-makers) with XM receivers that would be individually authorized to receive critical situational awareness information.

In light of XM's unique capabilities in providing emergency alert and safety information on a timely basis, it is our belief that policymakers should support the efforts we have made (and will continue to make) to enhance the delivery of alert and situational awareness messages to those who are in need of such information. Initiatives within the government to limit the availability of integral elements of this invaluable alert dissemination system (such as our 21 metropolitan area-based Instant Traffic, Weather and Alert channels) would not be beneficial to either XM subscribers or the U.S. population as a whole. Situational awareness in real-time to as many individuals as possible depends in part on consumers regularly listening to the radio channels providing the information – consumers who tune in to one of XM's Instant Traffic, Weather and Alert channels as a useful service are more likely to be listening and actually receive the awareness message.

Exhibit A

Reply Comments of United States Department of Transportation,

FCC Docket No. MB 04-160 (June 21, 2004)

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Petition for Declaratory Ruling of the National	)	
Association of Broadcasters Regarding	)	MB 04-160
Programming Carried by Satellite Digital	)	
Audio Radio Service Providers	)	
	)	

Reply Comments of the
United States Department of Transportation

Introduction

The National Association of Broadcasters ("NAB") has petitioned the Federal Communications Commission ("FCC" or "Commission") in this proceeding to bar providers of satellite digital audio radio services ("SDARS") from transmitting nationwide the traffic and weather conditions in various metropolitan areas. The United States Department of Transportation ("DOT" or "Department") strongly supports widespread dissemination of such information in the interests of enhancing safe and efficient transportation. In response to suggestions that it is not in the public interest for SDARS providers to do this, DOT submits these reply comments.

The Record

The NAB seeks to stop SDARS providers from transmitting throughout the country information on the traffic, roadway, and weather conditions in particular communities. Among other things, NAB considers transmission of such information by satellite radio "essentially duplicative" of services provided by terrestrial radio broadcasters, and thus by implication of little real value to the public. Petition at 17. Similarly, Radio One, Inc. contrasts SDARS' dissemination of this information with

"*new* services that local radio inherently cannot provide." Comments of Radio One, Inc. at 1, *quoting* 12 FCC Rcd 5754 (1997).

Such comments are inaccurate on their face. Not only is the information conveyed by SDARS providers more frequently updated and thus more accurate, but local broadcasters simply cannot offer such information to those outside the very finite range of their transmissions, usually a discrete community area.[1] More importantly, they fail to appreciate the true value of making travel-related information widely available beyond such areas and on a continuous basis. The Department is participating in this proceeding in order to emphasize the contributions to the public interest of services like these.

The Public Interest

It is beyond question that there is a strong public interest in making available to drivers information that is relevant to their actual and potential journeys. Awareness of traffic congestion, the locations and consequences of accidents, road surface conditions, weather, etc. is important to travelers because it enables them to make better decisions about whether and when to travel, which route(s) to follow, what equipment to carry, and what contingencies to anticipate. Informed decisions, in turn, allow motorists, including commercial drivers of over-the-road trucks and buses, to avoid adding to congestion or emergency response problems, save time, and reduce fuel consumption and pollution. The result is enhanced safety, efficiency, and predictability, as well as improved traffic management.

Local television and radio stations know this information has value to the public, so they broadcast it on a regular basis throughout the day. Its value and benefits to the traveling public, however, are not limited to those who live or drive daily within specific community boundaries. DOT in 1999 asked the Commission to make such information

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[1]/ Some commenters suggest that SDARS' transmission of travel-related information would harm local broadcasters and therefore the residents of such communities. *See* Comments of Radio One and State Broadcasters Associations. But there is precious little explanation of how that would occur and certainly no evidence. Moreover, as the Commission stressed in approving SDARS, "The public interest in this regard is the provision of services of value to the listening public and includes the protection of competition, not competitors." 12 FCC Rcd 5754 at ¶ 9 (footnote omitted).

available throughout the country by means of a single abbreviated telephone dialing code. *Petition by the U.S. Department of Transportation for Assignment of an Abbreviated Dialing Code (N11) to Access Intelligent Transportation System (ITS) Services Nationwide*, Public Notice DA 99-761, CC Dkt. No. 92-105 (1999). We did so, in part, because both local and long-distance travelers did not have easy, continuing access to this type of information as they drove through different communities, and we knew that once made readily available this information would be used, and the greater its use the more benefits would accrue. Id. [2]

The Commission agreed and granted the Department's request. *Use of N11 Codes and Other Abbreviated Dialing Arrangements, CC Docket No. 92-105, Third Report and Order and Order on Reconsideration*, 15 FCC Rcd 16753, FCC 00-256 (Released July 31, 2000). Such dialing codes are a scarce national resource, allocated only when a stringent public interest test is met. Id. at ¶ 10. The FCC allocated "511" as the nationwide telephone number for access to travel-related information in order to maximize the use and the benefits of travel-related information, including "decreasing traffic congestion, reducing air pollution and inefficient use of fossil fuels, improving the nation's productivity on and off the roadways, and improving traveler safety." Id., at ¶ 13.

From this perspective, access to such information via satellite radio differs only in degree from access via an abbreviated dialing code. The difference is one of geographic reach, but the core point was and is to ease access in order to reap the benefits of informed decisions by travelers. The instant petition and the comments of some parties seek to deny this, but they cannot. Not only does reality and FCC precedent stand against the petition, but the record in this proceeding is overwhelmingly comprised of the comments of thousands of individuals attesting to the benefits derived from access to travel-related conditions pertaining to areas outside of their own localities. [3] These

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[2]/ The information available through 511 is also route-specific at the request of individual travelers.

[3]/ *See, e.g.*, Comments of Dr. David Livingstone, Phillip Parish, Gary Epstein, Steve Wintermote, to list but a tiny fraction of these pleadings. These comments are virtually all extremely short, but they are utterly personal statements of the value this information has for each of them, rather than the identical submissions

benefits are exactly those anticipated by the Department and the Commission. As DOT and the FCC have recognized, improving access can only serve the public interest in safe and efficient transportation.

Conclusion

The Department, the Commission, and travelers everywhere know that there is a strong public interest in making travel-related information readily available. They know as well that the value of such information, even when pertinent to particular metropolitan areas, is not constrained to those living and working within the boundaries of those communities. The NAB Petition seeks to limit dissemination of this information, and thus its benefits, to those within the reach of particular media. DOT opposes such a restriction, and we ask the Commission to deny the Petition.

Respectfully submitted,

JEFFREY A. ROSEN
General Counsel

June 21, 2004

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so commonly orchestrated in similar circumstances. *See also* the Comments of the Satellite Industry Association and American Honda Motor Co.

Exhibit B

Eilene Guy, “Live From Washington, D.C., This is Red Cross Radio!”

(September 14, 2005)

Live From Washington, D.C., This Is Red Cross Radio!

Eilene Guy

Wednesday, September 14, 2005 — The American Red Cross is reaching high into the sky to bring the most up-to-date, most accurate Hurricane Katrina relief information directly to storm survivors, relief workers and Americans coast to coast.

Live from Washington, D.C., this is Red Cross Radio!

Since Sept. 5, XM Satellite Radio has dedicated channel 248 as its official Red Cross channel. The round-the-clock broadcast – sometimes right from the Red Cross Disaster Operations Center – is aimed at the XM Nation of five million-plus subscribers.

At the down-to-earth end of this innovation, XM and Audiovox have donated 200 satellite radio receivers to the Red Cross, which will use them throughout the region ravaged by Hurricane Katrina.

"You can take these units and put them in a shelter, in a vehicle, and run them on batteries," said Scott Walterman, XM's director of news programming. "This will give the Red Cross flexibility of communications like never before."

As a satellite-based "mega-station," XM reaches listeners nationwide and it's nimble enough to customize content quickly.

"This will let the Red Cross get immediate information about shelter locations and assistance programs to anyone who has XM Radio service, even in their car, without them having to wait for a 'middle man' to report it," said Charlie Zurenko of the Red Cross disaster response communications unit in Washington, D.C.

"This is brand new for us, but as we get to using it, I can see us communicating pre-landfall evacuation and disaster preparedness information to people in vulnerable areas.

"Down the road, this has the potential – and this is exciting – of letting us use Red Cross Radio to reach volunteers pre-landfall and during a relief operation, when land-based communications are down, as they often are after a disaster. This is satellite radio, so it doesn't rely on infrastructure on the ground."

Maggie Linton is one of the XM producers who create programming for Red Cross Radio. An enthusiastic veteran of 33 years in broadcast journalism – much of it breaking ground as a woman in sports reporting – she goes beyond converting press releases and internal communications into audio: She talks to volunteers and even recipients of Red Cross assistance.

"We'll be going to the (Washington, D.C. armory) shelter to do live interviews," she said. "Our aim is to have a two-hour loop with fresh content. We want to keep it interesting and up to date, so your

volunteers, people in shelters and our listeners around the country can rely on it."

XM Radio channel 248 carries general disaster relief information and updates geared to specific locations. Information of interest to residents of shelters in Baton Rouge, for example, can be anchored at a set time each hour. With Hurricane Ophelia threatening the East Coast, Red Cross Radio broadcast an interview with a Red Cross disaster worker in Hilton Head, S.C., about preparations there.

"We can invite our partner agencies to use this tool too," Zurenko said. "For example, the Humane Society could use it to provide information to pet owners: What they need to think about before a disaster strikes, in terms of their pet's wellbeing. Where they can find an evacuation shelter that can accommodate pets. How to comfort a pet during a traumatic relocation period."

Shelter managers will decide how to use the XM Radio capability. Depending on the facility, programming may be broadcast over a public address system, or it may be more appropriate to set it up in an "information room" dedicated to that purpose.

The Red Cross channel is in addition to XM's existing Emergency Alert channel 247, which carries updated information before, during and after natural disasters, weather emergencies and other hazardous incidents.

"The Red Cross recognizes that one of the most important things people need in an emergency is information," Zurenko said. "This is a very 21st century way to communicate with people in real time, without some of the limitations of systems that are vulnerable right when people need them most. It just adds to all the other ways we communicate with the American people."


Printer Friendly Version

Related Links:

- Support the Red Cross Disaster Relief Fund
- Contact Your Local Chapter about Volunteering

Send this article to a Friend or Colleague. . .

Send to e-mail address:

Your name:

Your e-mail:

Your comments:

Forward Article Reset

Tell us what you think!

Was this article informative?

lowest 1 2 3 4 5 highest

Did it inspire you to help or get involved?

lowest 1 2 3 4 5 highest

Would you return to read similar articles?

lowest 1 2 3 4 5 highest

How could this article better meet your needs?

If you would like a response please include your e-mail address.

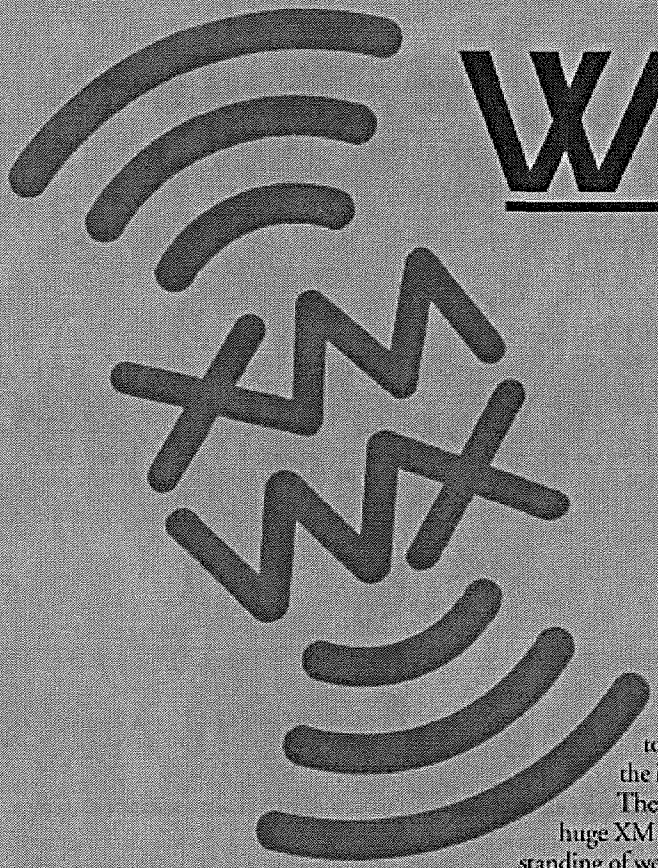
Exhibit C

Editor's Choice Award presented by *Flying* Magazine

FLYING®

Editors' Choice Awards 2005

After the end of each year, *Flying*'s editors review aviation developments of the previous 12 months, searching for outstanding achievements. In making our choices we consider only aircraft, avionics, pilot services and equipment that have actually entered service during the year. Here are our selections for the 2005 *Flying* Editors' Choice Awards.



WxWorx

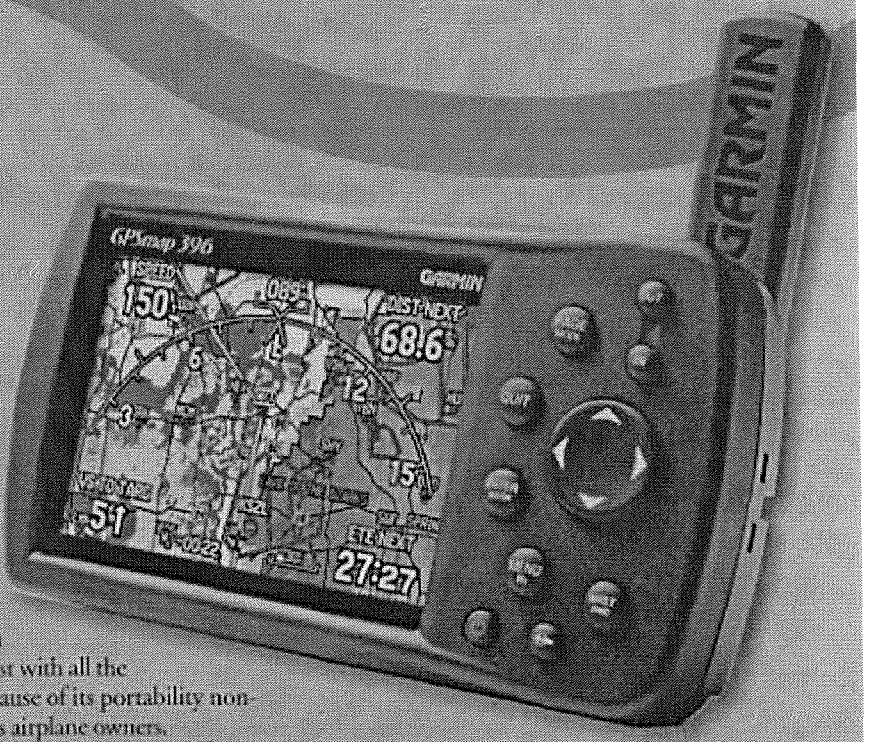
XM Weather

The reliable delivery of real time radar and other weather information to the cockpit in flight has been a dream of pilots for decades, and XM Weather has made it come true. Using the incredibly powerful signal of the XM satellites, the weather data can be received without interruption using nothing more than a GPS-sized antenna and a variety of portable or fixed receivers. The star of the show is a display from the Nexrad national weather radar network, but XM Weather delivers a host of other information including metars, forecasts, cloud pictures, winds aloft, sigmets and airmets and TFRs.

XM provides the "pipe" to send the data down to the airplane, and WX Worx supplies the actual weather information. WX Worx was founded by Bob Baron, a pilot and airplane owner, in Huntsville, Alabama. Baron's original goal was to provide early warning of severe weather to anyone at risk, and the company has customized its service to give pilots the information they need to fly with safety and comfort.

The high powered, available at any altitude and at any time, signal from the huge XM satellites are the key to weather in the cockpit, and WX Worx's understanding of weather fills that pipe with the information we need, and for that outstanding service, we name XM Weather a *Flying* Editors' Choice for 2005.

Garmin GPSMap 396



Advances in miniature electronics are astonishing, but that word is hardly enough to describe the functions and features that Garmin has packed into its new GPSMap 396 portable system. A full capability color moving map driven by a GPS receiver is a given with Garmin, but then add in XM Weather, XM entertainment channels and a terrain awareness and warning system (TAWS), and you have the 396. And, the price is under $2,500, a small fraction of what the same capabilities would cost with all the equipment mounted in the airplane. Best of all, because of its portability non-owner pilots can have all of this capability the same as airplane owners.

XM Weather is now available over many systems, but the GPSMap 396 is delivering more information than most. In addition to the valuable Nexrad radar picture, you also see all forecasts, metars, cloud pictures, winds aloft, freezing levels and TFRs. The 396 has a high resolution color screen that is easy to read in all lighting conditions. We believe that the GPSMap 396 has more weather, navigation and terrain alerting capability than any other single box available as a portable or mounted in the airplane. For bringing so much safety and convenience capability to the cockpit of any airplane of any size and just about any budget, we salute the Garmin GPSMap 396 with an Editors' Choice for 2005.

Columbia 400

Nothing beats speed, and the Columbia 400 is simply the fastest piston airplane in production. The Columbia 400 can cruise at 235 knots, or maybe even a little more, at 25,000 feet, and if you don't want to wear an oxygen mask, it easily tops 200 knots at 10,000 feet. The airplane is built from composite materials and boasts the strength to qualify for the tougher utility certification category.

The 400 is equipped with the Avidyne Entegra glass cockpit system, but late last year Columbia announced an option for the Garmin G1000 integrated glass cockpit including the new full capability autopilot. With the G1000 displays in the horizontal "landscape" position instead of the vertical "portrait" location of the Entegra, Columbia was able to lower the glareshield for improved visibility and raise the under panel knee bolsters to offer more foot and leg room. Columbia is also the first to offer the G1000 with the READY Pad that allows pilots to control the system with either a keyboard or knobs.

The Columbia 400 has a climate control air conditioning system and a new electro-thermal ice protection system, which are all really cool, but it's the speed that is paramount in making it a *Flying* Editors' Choice selection for 2005.

Exhibit D

Letter from the Monmouth County Office of Emergency Management praising XM's ability to transmit situational awareness information

OFFICE OF THE COUNTY PROSECUTOR
COUNTY OF MONMOUTH

JOHN KAYE
MONMOUTH COUNTY PROSECUTOR

OFFICE OF EMERGENCY MANAGEMENT
300 HALLS MILLS ROAD
FREEHOLD, NEW JERSEY 07728-1789
(732) 431-7400
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ROBERT A. HONECKER JR.
FIRST ASSISTANT PROSECUTOR

EDWARD D. KIRSCHENBAUM
CHIEF OF INVESTIGATIONS

GUY G. MCCORMICK
DEPUTY CHIEF OF INVESTIGATIONS

HARRY CONOVER
COORDINATOR

June 30, 2006

Mr. John T. Archer
XM Satellite Radio
1500 Eckington Place NE
Washington DC 20002-2194

Dear Mr. Archer:

I want to express my sincere thanks to you and XM Satellite Radio for your participation and demonstrations at our recent Weapons of Mass Destruction exercise at Brookdale Community College in Monmouth County.

The existing method of emergency notifications is through a system called EAS (Emergency Alerting System). This is provided through air local radio stations.

I was impressed with XM and the use of satellite radio to broadcast situational awareness to not only emergency responders but to our area hospital network.

We as emergency management should be looking to the future for technology to assist us in handling events such as terrorism more typically are our weather events. These weather warnings must be passed on to the local coordinators without delay.

Our procedure to accomplish this task is to fax 53 weather messages to the local coordinators. This takes about an hour to do this. A single police radio broadcast will be ok, however all of our coordinators are not law enforcement officers. I believe the real answers lies with XM. During the exercise I put messages out for situational awareness in a matter of 15 seconds. When you are dealing with emergencies time is of the essence.

There are a few hurdles still to get over in obtaining XM Satellite channels for emergency broadcast, but I firmly believe this is a giant step in keeping our emergency agencies and emergency responders sage and aware of the environment they may be dealing with.

Again thank you and hope that this may be the beginning of a meaningful partnership in Emergency Management.

Very truly yours,

JOHN KAYE
MONMOUTH COUNTY PROSECUTOR

By: Harry Conover
Coordinator
Monmouth County Office of
Emergency Management

HC:tmf

Exhibit E

Goeff Fein, “Spotlight: Using Satellite Radio for Homeland Security,”

Space News (June 20, 2005)

Spotlight: Using Satellite Radio For Homeland Security

411 words
20 June 2005
Satellite News
Vol. 28; Issue 25
English

Raytheon demonstrated its Mobile Enhanced Situational Awareness (MESA) system designed to deliver data over the **XM** Satellite **Radio** system at the Coalition Warrior Interoperability Demonstration '05 (CWID), a homeland security and homeland defense exercise that began June 13 and runs through June 23.

Raytheon demonstrated how quickly the system can respond to a homeland security situation, said Mike Fleenor, MESA's program manager. Information would be passed from Raytheon's MESA Service Center to **XM** Satellite. The satellite system would then transmit the information, both audio and images, to troops or first responders.

In an attack against a facility, for example, a photograph of the site could be taken and transmitted to a commander away from the scene who has the capability to draw response operations onto the image, Fleenor said, much in the way television football analysts appear to draw on the television screen to describe a play. In the homeland security scenario, the commander could indicate areas that personnel should stay away from or command post locations. That information could then be sent to first responders on the scene, he said.

CWID is an annual event that enables the U.S. combatant commands and international community to investigate command, control, communications, computers, intelligence, surveillance, and reconnaissance solutions for enhancing coalition interoperability. U.S. Northern Command is the host combatant command for CWID 2005.

Besides homeland security uses, MESA can also be used to help keep track of friendly forces, known as blue force tracking, and potentially as a warning system for deployed troops, Fleenor said.

XM Satellite provides coverage to the entire continental United States. Worldspace, the other satellite system Raytheon is working with, covers Africa, Asia and Europe. The higher bandwidth of satellite systems such as **XM** and World Space provides for faster transmissions, making it ideal for blue force tracking, Fleenor added.

"You can effectively see the position [and status] of vehicles," Fleenor said. "It's mind-boggling the amount of flexibility with this bandwidth."

And there is a just a few seconds delay in the transmission, he added. Additionally, blue force tracking on the move is possible because the terminals are designed to work while the vehicle is moving.

MESA could also be used to provide audio alerts that could be downloaded to specific users instead of being broadcast to a wide audience.

"You can tailor the broadcast to a small group or targeted individuals," Fleenor said.

--Geoff Fein

Exhibit F

Jeff Smith, “Radio Stations Silent on Tornado Warning,” The Morning News

The Morning News

Local News for Northwest Arkansas

Print Page

Radio Stations Silent On Tornado Warning

By Jeff Smith
The Morning News

Gardiner Powell took cover Sunday in his Rogers basement equipped with his radio.

Problem was he couldn't find a radio station in the area that could provide weather updates as tornadoes and large hail ripped through Benton County on Sunday night.

"We couldn't get anything except for music and regular programming, which kind of upset me," he said. "We were wanting to know what was going on without staying down there all night, and we wanted to know if we needed to be more concerned than we were already."

KURM Radio, which broadcasts on 100.3 FM and 790 AM out of Rogers, did broadcast tornado warnings Sunday night. Attempts to reach station leaders Wednesday were unsuccessful.

Most radio stations in Northwest Arkansas do not have workers at night or on the weekends, making providing emergency information during those times difficult, station managers said.

"We get kind of nailed when it's night time and there's nobody here to break in. There just aren't many people listening to the radio at night," said Rick Stockdell, general manager of KUAF National Public Radio 91.3 FM.

"Most people are at home and flip on the TV and see what's going on," he said.

Having employees work at night and the weekend can be expensive, especially when severe weather occurs a few times a year in the area, Stockdell said.

Radio stations with large markets also must balance the needs of listeners in one county with those of others. Benton and Washington county residents likely wouldn't care about a tornado in Mena, which is in KUAF's coverage area, Stockdell said.

Stockdell said the station will likely have equipment in place by fall to allow employees to call into the station from home and interrupt programming to report breaking weather news.

Radio stations were not alone in not broadcasting weather warnings. Local officials are trying to determine why no tornado warning was broadcast on Cox Communications' channels.

Kelly Zega, Cox community relations manager, said she's unsure why the warning never went out across its channels Sunday night.

The cable company receives a signal from a local radio station and a state television station, but a signal was never received Sunday. The signal would switch every Cox cable channel to the same channel, which shows National Weather Service weather bulletins and directions.

"It's an outside signal that we receive, and the logs we have here on site show that we never received it," Zega said. "We're concerned about it as well. It should happen automatically."

The emergency signal provides text in English and Spanish and voice commands in English. Zega said the company is evaluating how to provide additional resources to its Spanish-speaking customers.

Gayla McKenzie, owner and general manager of KBVA Variety 106.5 FM in Bella Vista, normally drives down the road from her house to provide breaking weather news.

But the station's transmitter, in the path of storm, was knocked out Sunday, and the station was off the air until Monday afternoon, she said.

"I was about to go announce the bad weather when we went off air," McKenzie said.

Radio stations receive weather information from the Internet, local television stations and the Emergency Alert System. McKenzie said she was surprised other stations weren't broadcasting the emergency alerts.

Stations are allowed to have automated programming as long as they have monitoring systems in place, she said.

Jay Phillips, manager of operations for Cumulus Broadcasting, said the five FM stations and two AM stations did not break into automated programming Sunday.

He said the station can break into late-night programming and has done so in the past for severe weather.

Repeated calls to Clear Channel, which owns four FM radio stations in the area, were not returned Wednesday.